

Chapter 22

Cancer survival in Seoul, Republic of Korea, 1993–1997

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Abstract

The Seoul cancer registry was established in 1991. Cancer is a notifiable disease, and registration of cases is done by passive and active methods. The registry contributed survival data for 56 cancer sites or types registered during 1993–1997. Follow-up information has been gleaned predominantly by passive methods with median follow-up ranging between 5–82 months for various cancers. The proportion with histologically verified diagnosis for different cancers ranged between 23–99%; death certificates only (DCOs) comprised 0–67%; 33–100% of total registered cases were included for survival analysis. The top-ranking cancers on 5-year age-standardized relative survival rates were testis and placenta (95%), thyroid (93%), non-melanoma skin (93%), corpus uteri (79%), renal pelvis (77%), cervix (76%), Hodgkin lymphoma (75%), breast (74%) and prostate (74%). Five-year relative survival by age group showed a decreasing trend with increasing age groups for cancers of the small intestine, colon, gall bladder, cervix, corpus uteri, ovary, kidney, urinary bladder and thyroid, or was fluctuating for other cancers.

Seoul cancer registry

The Seoul cancer registry was established in 1991 at the Seoul National University College of Medicine, Seoul, funded by the Ministry of Health and Welfare. The registry contributed data to the quinquennial IARC publication *Cancer Incidence in Five Continents* for the first time in volume VIII [1]. Cancer is a notifiable disease, and registration of cases is done by passive and active methods. The principal source of information on 80% of cancer cases is the data file from Korean central cancer registry. The rest of the cases are registered by the active method of visiting more than 60 smaller hospitals besides perusal of Korean medical insurance records. The registry covers an area of 605.5 km² and caters to an entirely metropolitan population of about 10.6 million with a sex ratio of 1010 females to 1000 males in 1995. The average annual age-standardized incidence rate is 287 per 100 000 among males and 173 per 100 000 among females, with a lifetime cumulative risk of one in 4 of developing cancer in the period 1993–1997. The common cancers among males are stomach, liver and lung. The rank order among females is stomach, cervix and breast [1].

The registry is contributing data on survival from 56 cancer sites or types registered during 1993–1997 for the first time in this volume of IARC publication on *Cancer Survival in Africa, Asia, the Caribbean and Central America*.

Data quality indices (Table 1)

The proportion of cases with histologically verified cancer diagnosis in the series is 71%, varying from 22% (cancer of the uterus unspecified) to 99% (Hodgkin lymphoma). The proportion of cases registered as death certificates only (DCOs) is 9%, ranging from none for a few cancers (lip, vagina, penis, Hodgkin lymphoma and multiple myeloma) to 67% in unspecified uterus cancer. Cases excluded without any follow-up are 6%. Thus, 33–100% of the total cases registered are included in the estimation of the survival probability.

Outcome of follow-up (Table 2)

The follow-up information has been obtained predominantly by passive methods. These included obtaining mortality information from the death certificates in the national statistics office. The mortality data are periodically matched with the incident cancer database using the National Identity number issued by the Korean government to every citizen at birth. The vital status of the unmatched incident cases is also ascertained by repeated scrutiny of hospital records. However, all incident cases for whom death information is not available are presumed to be alive on the last date of the year for which the mortality data are fully utilized for matching.

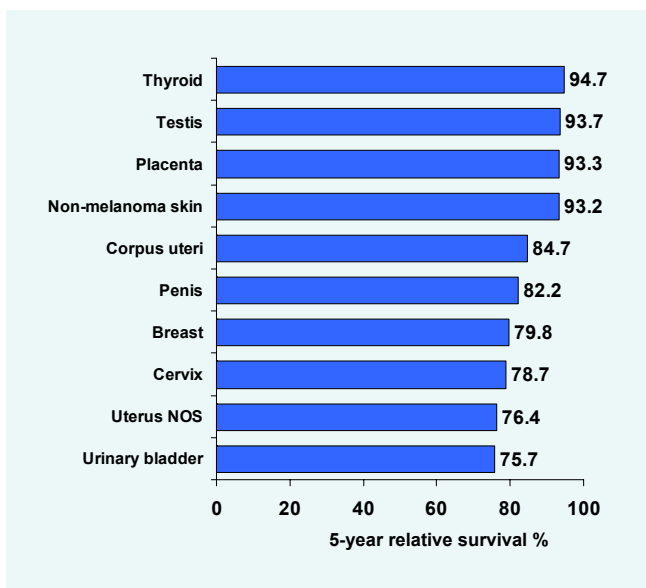
The closing date of follow-up was 31st December 2001. The median follow-up ranged from 5 months for cancer of the pancreas to 82 months for cancer of the placenta.

Survival statistics

All ages and both sexes together (Table 3)

The top-ranking cancers on 5-year relative survival are thyroid (95%), testis (94%), placenta and non-melanoma skin (93%) and corpus uteri (85%). The lowest survival rate is encountered with pancreatic cancer and unspecified leukaemia (15%) preceded by lung, liver and oesophagus (19%). Larynx (72%) and salivary gland (69%), among other head and neck cancers, and colon (64%) and rectum (61%), among gastrointestinal cancers, have higher survival than others. Survival from cancers of the urinary system ranged between 76% for urinary bladder and 43% for unspecified category. Hodgkin lymphoma had a better survival (74%) than non-Hodgkin (57%). The survival figures for leukaemias are 43% for lymphoid and 27% for myeloid.

Figure 1a. Top ten cancers (ranked by survival), Seoul, Republic of Korea, 1993–1997



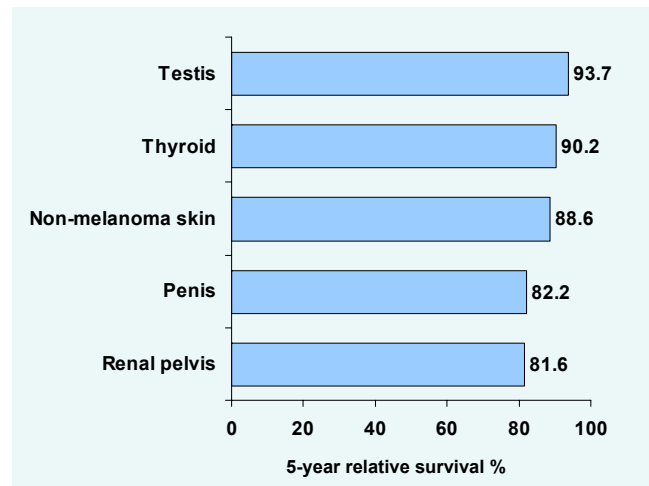
The 5-year age-standardized relative survival (ASRS) probability for all ages together is generally less than or similar to the corresponding unadjusted one for a majority of cancers. Also, the 5-year ASRS (0–74 years of age) is generally higher than or similar to the corresponding ASRS (all ages) for a majority of cancers.

Sex

Male (Table 4a)

The 5-year relative survival probabilities for lip, larynx, renal pelvis, bladder and unspecified urinary system cancers are noticeably higher among males than females.

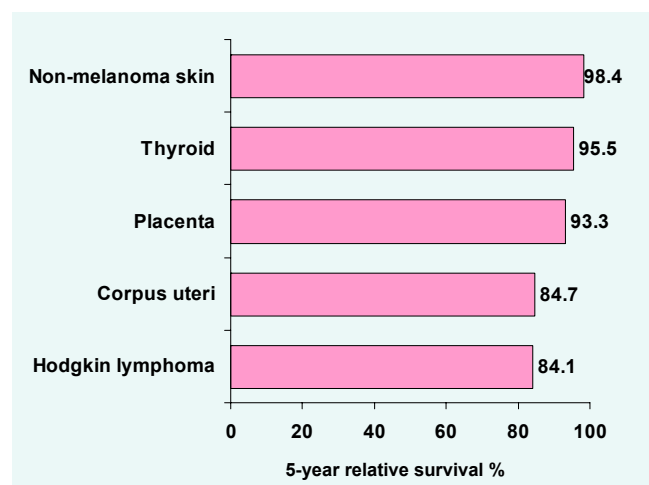
Figure 1b. Top five cancers (ranked by survival), Male, Seoul, Republic of Korea, 1993–1997



Female (Table 4a)

The 5-year relative survival estimates for cancers of the breast, cervix and ovary are 80%, 79% and 66%, respectively. Survival is distinctly higher among females than males for cancers of the oral cavity, salivary gland, nasopharynx, nose/sinuses, other thoracic organs, skin melanoma and non-melanoma, mesothelioma, Hodgkin lymphoma and lymphoid leukaemia.

Figure 1c. Top five cancers (ranked by survival), Female, Seoul, Republic of Korea, 1993–1997



Age group (Table 4b)

The 5-year relative survival by age group reveals an inverse relationship: a decreasing survival with increasing age at diagnosis for cancers of the small intestine, colon, gall bladder, cervix, corpus uteri, ovary, kidney, urinary bladder and thyroid. For all other cancers, the survival by age group did not display any pattern.

References

1. Parkin DM, Whelan SL, Ferlay J and Storm H. *Cancer Incidence in Five Continents, Vol I to VIII: IARC Cancerbase No. 7*. IARCPress, Lyon, 2005.

Table 1. Data quality indices - Proportion of histologically verified and death certificate only cases, number and proportion of included and excluded cases by site: Seoul, Republic of Korea, 1993–1997 cases followed-up until 2001

| Site | ICD-10 | Total registered | % | | Excluded cases | | | | | Included cases | |
|---------------------------|------------|------------------|------|------|----------------|-----------|--------|-------|------|----------------|-------|
| | | | HV | DCO | DCO | Follow-up | Others | Total | % | No. | % |
| Lip | C00 | 26 | 88.5 | 0.0 | 0 | 0 | 0 | 0 | 0.0 | 26 | 100.0 |
| Tongue | C01-02 | 268 | 83.6 | 6.0 | 16 | 9 | 0 | 25 | 9.3 | 243 | 90.7 |
| Oral cavity | C03-06 | 344 | 80.2 | 8.4 | 29 | 12 | 0 | 41 | 11.9 | 303 | 88.1 |
| Salivary gland | C07-08 | 204 | 89.7 | 1.0 | 2 | 8 | 0 | 10 | 4.9 | 194 | 95.1 |
| Tonsil | C09 | 98 | 86.7 | 1.0 | 1 | 5 | 0 | 6 | 6.1 | 92 | 93.9 |
| Oropharynx | C10 | 57 | 75.4 | 3.5 | 2 | 3 | 0 | 5 | 8.8 | 52 | 91.2 |
| Nasopharynx | C11 | 295 | 81.7 | 0.7 | 2 | 15 | 0 | 17 | 5.8 | 278 | 94.2 |
| Hypopharynx | C12-13 | 180 | 86.1 | 3.9 | 7 | 3 | 0 | 10 | 5.6 | 170 | 94.4 |
| Oesophagus | C15 | 1 353 | 72.8 | 10.6 | 143 | 76 | 0 | 219 | 16.2 | 1 134 | 83.8 |
| Stomach | C16 | 18 914 | 77.9 | 9.0 | 1710 | 1021 | 3 | 2734 | 14.5 | 16 180 | 85.5 |
| Small intestine | C17 | 284 | 75.4 | 7.7 | 22 | 20 | 0 | 42 | 14.8 | 242 | 85.2 |
| Colon | C18 | 4 277 | 79.1 | 7.3 | 314 | 243 | 0 | 557 | 13.0 | 3 720 | 87.0 |
| Rectum | C19-20 | 4 071 | 87.9 | 2.8 | 112 | 243 | 1 | 356 | 8.7 | 3 715 | 91.3 |
| Anus | C21 | 420 | 37.1 | 21.2 | 89 | 18 | 0 | 107 | 25.5 | 313 | 74.5 |
| Liver | C22 | 12 120 | 24.3 | 13.3 | 1611 | 635 | 2 | 2248 | 18.5 | 9 872 | 81.5 |
| Gall bladder | C23-24 | 2 751 | 51.9 | 11.7 | 321 | 137 | 0 | 458 | 16.6 | 2 293 | 83.4 |
| Pancreas | C25 | 2 284 | 38.2 | 15.6 | 356 | 121 | 0 | 477 | 20.9 | 1 807 | 79.1 |
| Gastrointestinal tract | C26 | 174 | 10.3 | 65.5 | 114 | 2 | 0 | 116 | 66.7 | 58 | 33.3 |
| Nose/Sinuses | C30-31 | 246 | 85.4 | 4.5 | 11 | 11 | 0 | 22 | 8.9 | 224 | 91.1 |
| Larynx | C32 | 956 | 75.5 | 12.7 | 121 | 44 | 0 | 165 | 17.3 | 791 | 82.7 |
| Lung | C33-34 | 10 294 | 67.8 | 12.7 | 1311 | 499 | 2 | 1812 | 17.6 | 8 482 | 82.4 |
| Other thoracic organs | C37-38 | 265 | 74.3 | 10.6 | 28 | 11 | 0 | 39 | 14.7 | 226 | 85.3 |
| Bone | C40-41 | 424 | 74.5 | 11.3 | 48 | 27 | 6 | 81 | 19.1 | 343 | 80.9 |
| Melanoma of skin | C43 | 199 | 93.0 | 2.5 | 5 | 15 | 0 | 20 | 10.1 | 179 | 89.9 |
| Other skin | C44 | 719 | 89.7 | 5.7 | 41 | 59 | 1 | 101 | 14.0 | 618 | 86.0 |
| Mesothelioma | C45 | 56 | 87.5 | 1.8 | 1 | 3 | 0 | 4 | 7.1 | 52 | 92.9 |
| Connective tissue | C47+C49 | 542 | 86.9 | 4.6 | 25 | 32 | 1 | 58 | 10.7 | 484 | 89.3 |
| Peritoneum | C48 | 180 | 76.7 | 5.6 | 10 | 10 | 0 | 20 | 11.1 | 160 | 88.9 |
| Breast | C50 | 5 907 | 88.3 | 3.3 | 196 | 356 | 0 | 552 | 9.3 | 5 355 | 90.7 |
| Vulva | C51 | 59 | 93.2 | 1.7 | 1 | 3 | 0 | 4 | 6.8 | 55 | 93.2 |
| Vagina | C52 | 53 | 94.3 | 0.0 | 0 | 7 | 0 | 7 | 13.2 | 46 | 86.8 |
| Cervix | C53 | 5 861 | 88.2 | 2.0 | 119 | 381 | 4 | 504 | 8.6 | 5 357 | 91.4 |
| Corpus uteri | C54 | 571 | 94.7 | 0.5 | 3 | 46 | 0 | 49 | 8.6 | 522 | 91.4 |
| Uterus unspecified | C55 | 267 | 22.8 | 66.7 | 178 | 2 | 0 | 180 | 67.4 | 87 | 32.6 |
| Ovary | C56 | 1 451 | 87.3 | 2.8 | 40 | 104 | 2 | 146 | 10.1 | 1 305 | 89.9 |
| Other female genital org. | C57 | 119 | 39.5 | 26.1 | 31 | 3 | 0 | 34 | 28.6 | 85 | 71.4 |
| Placenta | C58 | 121 | 40.5 | 2.5 | 3 | 5 | 0 | 8 | 6.6 | 113 | 93.4 |
| Penis | C60 | 47 | 97.9 | 0.0 | 0 | 4 | 0 | 4 | 8.5 | 43 | 91.5 |
| Prostate | C61 | 1 051 | 81.3 | 4.7 | 49 | 54 | 0 | 103 | 9.8 | 948 | 90.2 |
| Testis | C62 | 121 | 91.7 | 3.3 | 4 | 10 | 1 | 15 | 12.4 | 106 | 87.6 |
| Kidney | C64 | 1 302 | 81.6 | 4.5 | 59 | 66 | 0 | 125 | 9.6 | 1 177 | 90.4 |
| Renal pelvis | C65 | 155 | 94.2 | 0.6 | 1 | 7 | 0 | 8 | 5.2 | 147 | 94.8 |
| Ureter | C66 | 117 | 91.5 | 1.7 | 2 | 11 | 0 | 13 | 11.1 | 104 | 88.9 |
| Urinary bladder | C67 | 2 153 | 85.6 | 5.2 | 112 | 110 | 1 | 223 | 10.4 | 1 930 | 89.6 |
| Other urinary organs | C68 | 104 | 34.6 | 33.7 | 35 | 5 | 0 | 40 | 38.5 | 64 | 61.5 |
| Eye | C69 | 104 | 73.1 | 5.8 | 6 | 5 | 0 | 11 | 10.6 | 93 | 89.4 |
| Brain & nervous system | C70-72 | 1 570 | 57.8 | 19.4 | 304 | 103 | 0 | 407 | 25.9 | 1 163 | 74.1 |
| Thyroid | C73 | 2 883 | 93.8 | 1.5 | 43 | 183 | 0 | 226 | 7.8 | 2 657 | 92.2 |
| Adrenal gland | C74 | 103 | 65.0 | 10.7 | 11 | 5 | 0 | 16 | 15.5 | 87 | 84.5 |
| Other endocrine | C75 | 107 | 44.9 | 20.6 | 22 | 7 | 0 | 29 | 27.1 | 78 | 72.9 |
| Hodgkin lymphoma | C81 | 144 | 99.3 | 0.0 | 0 | 11 | 0 | 11 | 7.6 | 133 | 92.4 |
| Non-Hodgkin lymphoma | C82-85+C96 | 1 872 | 92.7 | 4.2 | 79 | 113 | 0 | 192 | 10.3 | 1 680 | 89.7 |
| Multiple myeloma | C90 | 375 | 93.9 | 0.0 | 0 | 28 | 0 | 28 | 7.5 | 347 | 92.5 |
| Lymphoid leukaemia | C91 | 641 | 98.6 | 1.2 | 8 | 38 | 0 | 46 | 7.2 | 595 | 92.8 |
| Myeloid leukaemia | C92-94 | 1 336 | 96.6 | 2.8 | 38 | 79 | 0 | 117 | 8.8 | 1 219 | 91.2 |
| Leukaemia unspecified | C95 | 166 | 42.2 | 45.8 | 76 | 10 | 0 | 86 | 51.8 | 80 | 48.2 |

HV: histologically verified; DCO: death certificate only

Table 2. Number and proportion of cases by vital status and median follow-up (in months) by site: Seoul, Republic of Korea, 1993–1997 cases followed-up until 2001

| Site | ICD-10 | Cases included | Dead | | Alive | | Complete FU | | Median FU (in months) |
|---------------------------|------------|----------------|-------|------|-------|------|-------------|-------|-----------------------|
| | | | No. | % | No. | % | No. | % | |
| Lip | C00 | 26 | 13 | 50.0 | 13 | 50.0 | 26 | 100.0 | 46.0 |
| Tongue | C01-02 | 243 | 115 | 47.3 | 128 | 52.7 | 243 | 100.0 | 54.4 |
| Oral cavity | C03-06 | 303 | 169 | 55.8 | 134 | 44.2 | 303 | 100.0 | 36.2 |
| Salivary gland | C07-08 | 194 | 71 | 36.6 | 123 | 63.4 | 194 | 100.0 | 62.5 |
| Tonsil | C09 | 92 | 47 | 51.1 | 45 | 48.9 | 92 | 100.0 | 52.4 |
| Oropharynx | C10 | 52 | 36 | 69.2 | 16 | 30.8 | 52 | 100.0 | 21.9 |
| Nasopharynx | C11 | 278 | 164 | 59.0 | 114 | 41.0 | 278 | 100.0 | 40.4 |
| Hypopharynx | C12-13 | 170 | 129 | 75.9 | 41 | 24.1 | 170 | 100.0 | 15.1 |
| Oesophagus | C15 | 1 134 | 947 | 83.5 | 187 | 16.5 | 1 134 | 100.0 | 9.2 |
| Stomach | C16 | 16 180 | 9 354 | 57.8 | 6 826 | 42.2 | 16 180 | 100.0 | 28.3 |
| Small intestine | C17 | 242 | 172 | 71.1 | 70 | 28.9 | 242 | 100.0 | 15.6 |
| Colon | C18 | 3 720 | 1 641 | 44.1 | 2 079 | 55.9 | 3 720 | 100.0 | 54.5 |
| Rectum | C19-20 | 3 715 | 1 743 | 46.9 | 1 972 | 53.1 | 3 715 | 100.0 | 53.2 |
| Anus | C21 | 313 | 233 | 74.4 | 80 | 25.6 | 313 | 100.0 | 16.2 |
| Liver | C22 | 9 872 | 8 208 | 83.1 | 1 664 | 16.9 | 9 872 | 100.0 | 6.2 |
| Gall bladder | C23-24 | 2 293 | 1 779 | 77.6 | 514 | 22.4 | 2 293 | 100.0 | 9.1 |
| Pancreas | C25 | 1 807 | 1 572 | 87.0 | 235 | 13.0 | 1 807 | 100.0 | 4.8 |
| Gastrointestinal tract | C26 | 58 | 47 | 81.0 | 11 | 19.0 | 58 | 100.0 | 4.6 |
| Nose/Sinuses | C30-31 | 224 | 126 | 56.3 | 98 | 43.8 | 224 | 100.0 | 47.9 |
| Larynx | C32 | 791 | 320 | 40.5 | 471 | 59.5 | 791 | 100.0 | 58.5 |
| Lung | C33-34 | 8 482 | 7 166 | 84.5 | 1 316 | 15.5 | 8 482 | 100.0 | 8.3 |
| Other thoracic organs | C37-38 | 226 | 122 | 54.0 | 104 | 46.0 | 226 | 100.0 | 34.0 |
| Bone | C40-41 | 343 | 186 | 54.2 | 157 | 45.8 | 343 | 100.0 | 44.9 |
| Melanoma of skin | C43 | 179 | 96 | 53.6 | 83 | 46.4 | 179 | 100.0 | 50.6 |
| Other skin | C44 | 618 | 131 | 21.2 | 487 | 78.8 | 618 | 100.0 | 68.7 |
| Mesothelioma | C45 | 52 | 33 | 63.5 | 19 | 36.5 | 52 | 100.0 | 23.4 |
| Connective tissue | C47+C49 | 484 | 228 | 47.1 | 256 | 52.9 | 484 | 100.0 | 53.7 |
| Peritoneum | C48 | 160 | 102 | 63.8 | 58 | 36.3 | 160 | 100.0 | 28.3 |
| Breast | C50 | 5 355 | 1 298 | 24.2 | 4 057 | 75.8 | 5 355 | 100.0 | 66.5 |
| Vulva | C51 | 55 | 22 | 40.0 | 33 | 60.0 | 55 | 100.0 | 52.8 |
| Vagina | C52 | 46 | 16 | 34.8 | 30 | 65.2 | 46 | 100.0 | 65.8 |
| Cervix | C53 | 5 357 | 1 342 | 25.1 | 4 015 | 74.9 | 5 357 | 100.0 | 67.5 |
| Corpus uteri | C54 | 522 | 99 | 19.0 | 423 | 81.0 | 522 | 100.0 | 72.2 |
| Uterus unspecified | C55 | 87 | 26 | 29.9 | 61 | 70.1 | 87 | 100.0 | 67.2 |
| Ovary | C56 | 1 305 | 483 | 37.0 | 822 | 63.0 | 1 305 | 100.0 | 58.3 |
| Other female genital org. | C57 | 85 | 51 | 60.0 | 34 | 40.0 | 85 | 100.0 | 22.9 |
| Placenta | C58 | 113 | 8 | 7.1 | 105 | 92.9 | 113 | 100.0 | 81.5 |
| Penis | C60 | 43 | 16 | 37.2 | 27 | 62.8 | 43 | 100.0 | 61.0 |
| Prostate | C61 | 948 | 460 | 48.5 | 488 | 51.5 | 948 | 100.0 | 53.6 |
| Testis | C62 | 106 | 11 | 10.4 | 95 | 89.6 | 106 | 100.0 | 75.9 |
| Kidney | C64 | 1 177 | 444 | 37.7 | 733 | 62.3 | 1 177 | 100.0 | 59.4 |
| Renal pelvis | C65 | 147 | 53 | 36.1 | 94 | 63.9 | 147 | 100.0 | 61.4 |
| Ureter | C66 | 104 | 51 | 49.0 | 53 | 51.0 | 104 | 100.0 | 55.8 |
| Urinary bladder | C67 | 1 930 | 712 | 36.9 | 1 218 | 63.1 | 1 930 | 100.0 | 60.4 |
| Other urinary organs | C68 | 64 | 42 | 65.6 | 22 | 34.4 | 64 | 100.0 | 19.3 |
| Eye | C69 | 93 | 31 | 33.3 | 62 | 66.7 | 93 | 100.0 | 65.9 |
| Brain & nervous system | C70-72 | 1 163 | 721 | 62.0 | 442 | 38.0 | 1 163 | 100.0 | 21.2 |
| Thyroid | C73 | 2 657 | 229 | 8.6 | 2 428 | 91.4 | 2 657 | 100.0 | 72.0 |
| Adrenal gland | C74 | 87 | 54 | 62.1 | 33 | 37.9 | 87 | 100.0 | 32.7 |
| Other endocrine | C75 | 78 | 29 | 37.2 | 49 | 62.8 | 78 | 100.0 | 60.6 |
| Hodgkin lymphoma | C81 | 133 | 40 | 30.1 | 93 | 69.9 | 133 | 100.0 | 63.6 |
| Non-Hodgkin lymphoma | C82-85+C96 | 1 680 | 799 | 47.6 | 881 | 52.4 | 1 680 | 100.0 | 52.7 |
| Multiple myeloma | C90 | 347 | 257 | 74.1 | 90 | 25.9 | 347 | 100.0 | 24.1 |
| Lymphoid leukaemia | C91 | 595 | 352 | 59.2 | 243 | 40.8 | 595 | 100.0 | 27.6 |
| Myeloid leukaemia | C92-94 | 1 219 | 915 | 75.1 | 304 | 24.9 | 1 219 | 100.0 | 13.6 |
| Leukaemia unspecified | C95 | 80 | 68 | 85.0 | 12 | 15.0 | 80 | 100.0 | 5.7 |

FU: follow-up

Table 3. Comparison of 1-, 3- and 5-year absolute and relative survival and 5-year age-standardized relative survival by site: Seoul, Republic of Korea, 1993–1997 cases followed-up until 2001

| Site | ICD-10 | Cases included | % Absolute survival | | | % Relative survival | | | % ASRS at 5-years | |
|---------------------------|------------|----------------|---------------------|--------|--------|---------------------|--------|--------|-------------------|------------|
| | | | 1-year | 3-year | 5-year | 1-year | 3-year | 5-year | all ages | 0-74 years |
| Lip | C00 | 26 | 76.9 | 53.8 | 50.0 | 80.3 | 61.1 | 61.8 | 65.5 | 71.6 |
| Tongue | C01-02 | 243 | 79.0 | 59.7 | 54.4 | 80.8 | 63.7 | 61.0 | 60.8 | 59.6 |
| Oral cavity | C03-06 | 303 | 73.3 | 50.2 | 45.7 | 74.9 | 53.4 | 50.6 | 49.9 | 51.6 |
| Salivary gland | C07-08 | 194 | 89.2 | 70.6 | 64.3 | 90.4 | 73.6 | 68.7 | 62.7 | 64.4 |
| Tonsil | C09 | 92 | 77.2 | 56.5 | 51.9 | 78.6 | 59.6 | 56.6 | 55.0 | 58.3 |
| Oropharynx | C10 | 52 | 67.3 | 40.4 | 32.7 | 68.9 | 42.8 | 35.7 | 37.0 | 42.8 |
| Nasopharynx | C11 | 278 | 81.7 | 52.5 | 43.7 | 82.7 | 54.4 | 46.3 | 41.3 | 47.1 |
| Hypopharynx | C12-13 | 170 | 56.5 | 28.2 | 25.1 | 58.0 | 30.7 | 29.3 | 31.3 | 31.3 |
| Oesophagus | C15 | 1 134 | 42.3 | 20.4 | 16.8 | 43.6 | 22.1 | 19.2 | 20.0 | 22.8 |
| Stomach | C16 | 16 180 | 64.2 | 47.3 | 42.9 | 65.6 | 50.2 | 47.6 | 43.3 | 49.2 |
| Small intestine | C17 | 242 | 55.4 | 36.4 | 30.0 | 56.5 | 38.3 | 32.8 | 29.6 | 34.5 |
| Colon | C18 | 3 720 | 77.1 | 62.2 | 56.8 | 78.9 | 66.7 | 64.1 | 59.8 | 65.7 |
| Rectum | C19-20 | 3 715 | 82.5 | 61.8 | 54.3 | 84.2 | 65.8 | 60.6 | 57.5 | 61.5 |
| Anus | C21 | 313 | 56.2 | 34.2 | 28.0 | 57.8 | 37.3 | 32.4 | 31.5 | 33.8 |
| Liver | C22 | 9 872 | 38.7 | 21.9 | 17.5 | 39.4 | 23.1 | 19.2 | 18.9 | 20.3 |
| Gall bladder | C23-24 | 2 293 | 44.3 | 27.3 | 23.0 | 45.5 | 29.5 | 26.4 | 27.9 | 30.3 |
| Pancreas | C25 | 1 807 | 26.1 | 14.4 | 13.1 | 26.8 | 15.6 | 15.0 | 15.6 | 17.1 |
| Gastrointestinal tract | C26 | 58 | 41.4 | 27.6 | 22.3 | 42.7 | 30.3 | 26.2 | 26.2 | 27.0 |
| Nose/Sinuses | C30-31 | 224 | 74.1 | 54.0 | 45.9 | 75.3 | 56.9 | 50.4 | 53.1 | 50.9 |
| Larynx | C32 | 791 | 83.1 | 65.7 | 61.5 | 85.5 | 71.8 | 71.8 | 71.0 | 75.6 |
| Lung | C33-34 | 8 482 | 40.2 | 18.6 | 15.9 | 41.4 | 20.3 | 18.5 | 18.1 | 19.7 |
| Other thoracic organs | C37-38 | 226 | 67.3 | 49.6 | 46.3 | 68.3 | 51.6 | 49.4 | 39.1 | 47.1 |
| Bone | C40-41 | 343 | 73.5 | 53.6 | 46.3 | 74.1 | 54.9 | 48.1 | 39.2 | 39.8 |
| Melanoma of skin | C43 | 179 | 81.0 | 56.4 | 48.1 | 82.4 | 59.6 | 52.8 | 52.6 | 49.5 |
| Other skin | C44 | 618 | 91.3 | 83.2 | 80.0 | 93.9 | 90.8 | 93.2 | 93.4 | 92.6 |
| Mesothelioma | C45 | 52 | 61.5 | 44.2 | 40.4 | 62.5 | 46.0 | 43.4 | 43.8 | 40.8 |
| Connective tissue | C47+C49 | 484 | 79.5 | 61.0 | 53.8 | 80.6 | 63.2 | 57.2 | 50.8 | 55.7 |
| Peritoneum | C48 | 160 | 65.6 | 46.3 | 38.4 | 66.5 | 47.7 | 40.4 | 30.4 | 41.2 |
| Breast | C50 | 5 355 | 94.0 | 82.7 | 77.7 | 94.5 | 84.0 | 79.8 | 74.4 | 78.6 |
| Vulva | C51 | 55 | 90.9 | 65.5 | 60.0 | 92.4 | 69.2 | 66.4 | 67.8 | 69.3 |
| Vagina | C52 | 46 | 82.6 | 71.7 | 67.2 | 83.8 | 74.3 | 71.1 | 62.5 | 75.6 |
| Cervix | C53 | 5 357 | 91.3 | 79.6 | 75.7 | 92.0 | 81.4 | 78.7 | 76.2 | 79.2 |
| Corpus uteri | C54 | 522 | 93.9 | 85.2 | 81.8 | 94.5 | 87.0 | 84.7 | 78.8 | 81.7 |
| Uterus unspecified | C55 | 87 | 86.2 | 77.0 | 73.6 | 87.0 | 78.7 | 76.4 | 68.7 | 77.8 |
| Ovary | C56 | 1 305 | 84.3 | 69.3 | 64.2 | 84.9 | 70.7 | 66.2 | 57.8 | 62.2 |
| Other female genital org. | C57 | 85 | 57.6 | 45.9 | 41.2 | 58.2 | 47.3 | 43.2 | 38.9 | 40.1 |
| Placenta | C58 | 113 | 96.5 | 94.7 | 92.8 | 96.6 | 95.0 | 93.3 | 95.3 | 95.3 |
| Penis | C60 | 43 | 88.4 | 76.7 | 64.9 | 92.0 | 87.9 | 82.2 | 85.8 | 77.5 |
| Prostate | C61 | 948 | 85.4 | 64.0 | 53.5 | 90.3 | 76.3 | 72.8 | 74.4 | 70.2 |
| Testis | C62 | 106 | 96.2 | 92.5 | 91.5 | 96.6 | 93.7 | 93.7 | 94.9 | 93.9 |
| Kidney | C64 | 1 177 | 80.6 | 67.9 | 63.0 | 82.1 | 71.6 | 68.9 | 63.5 | 70.3 |
| Renal pelvis | C65 | 147 | 84.4 | 70.7 | 65.1 | 86.3 | 76.4 | 74.9 | 77.4 | 71.1 |
| Ureter | C66 | 104 | 85.6 | 60.6 | 54.4 | 87.8 | 65.7 | 63.1 | 57.5 | 57.5 |
| Urinary bladder | C67 | 1 930 | 85.5 | 70.7 | 64.2 | 88.3 | 77.9 | 75.7 | 70.9 | 79.5 |
| Other urinary organs | C68 | 64 | 54.7 | 40.6 | 34.1 | 57.1 | 46.7 | 42.8 | 42.1 | 44.3 |
| Eye | C69 | 93 | 86.0 | 72.0 | 67.7 | 86.7 | 73.8 | 70.5 | 62.2 | 58.1 |
| Brain & nervous system | C70-72 | 1 163 | 62.9 | 42.5 | 39.2 | 63.4 | 43.3 | 40.4 | 37.1 | 38.9 |
| Thyroid | C73 | 2 657 | 95.7 | 93.7 | 91.6 | 96.4 | 95.6 | 94.7 | 92.8 | 94.4 |
| Adrenal gland | C74 | 87 | 67.8 | 46.0 | 40.8 | 68.2 | 46.6 | 41.7 | 23.1 | 31.6 |
| Other endocrine | C75 | 78 | 80.8 | 64.1 | 62.7 | 81.7 | 65.6 | 64.7 | 37.7 | 50.4 |
| Hodgkin lymphoma | C81 | 133 | 85.7 | 75.2 | 71.2 | 86.5 | 77.1 | 74.4 | 75.3 | 76.3 |
| Non-Hodgkin lymphoma | C82-85+C96 | 1 680 | 71.3 | 57.4 | 53.5 | 72.3 | 59.6 | 57.0 | 56.7 | 58.0 |
| Multiple myeloma | C90 | 347 | 65.1 | 38.3 | 27.4 | 66.4 | 40.6 | 30.1 | 29.4 | 32.0 |
| Lymphoid leukaemia | C91 | 595 | 67.1 | 46.4 | 41.8 | 67.4 | 46.8 | 42.5 | 33.8 | 38.5 |
| Myeloid leukaemia | C92-94 | 1 219 | 54.5 | 31.8 | 25.8 | 54.9 | 32.5 | 26.6 | 22.7 | 26.3 |
| Leukaemia unspecified | C95 | 80 | 28.8 | 17.5 | 14.8 | 29.2 | 18.1 | 15.3 | 13.8 | 16.8 |

ASRS: age-standardized relative survival

Table 4a. Site-wise number of cases, 5-year absolute and relative survival by sex: Seoul, Republic of Korea, 1993–1997 cases followed-up until 2001

| Site | ICD-10 | Cases included | Male | | | Female | | |
|---------------------------|------------|----------------|-------------------|------|------|-------------------|------|------|
| | | | % 5-year survival | | | % 5-year survival | | |
| | | | No. | Abs | Rel | No. | Abs | Rel |
| Lip | C00 | 26 | 14 | 50.0 | 65.0 | 12 | 50.0 | 58.8 |
| Tongue | C01-02 | 243 | 163 | 52.5 | 59.8 | 80 | 58.3 | 63.4 |
| Oral cavity | C03-06 | 303 | 221 | 38.8 | 44.1 | 82 | 64.2 | 67.7 |
| Salivary gland | C07-08 | 194 | 109 | 54.9 | 60.2 | 85 | 76.3 | 79.4 |
| Tonsil | C09 | 92 | 74 | 50.0 | 55.1 | 18 | 60.7 | 63.9 |
| Oropharynx | C10 | 52 | 42 | 33.3 | 36.4 | 10 | 30.0 | 32.6 |
| Nasopharynx | C11 | 278 | 204 | 37.5 | 40.4 | 74 | 60.8 | 62.4 |
| Hypopharynx | C12-13 | 170 | 159 | 24.3 | 28.7 | 11 | 36.4 | 37.8 |
| Oesophagus | C15 | 1 134 | 995 | 15.5 | 17.8 | 139 | 25.9 | 28.9 |
| Stomach | C16 | 16 180 | 10 439 | 43.1 | 48.5 | 5 741 | 42.7 | 45.9 |
| Small intestine | C17 | 242 | 143 | 27.9 | 31.2 | 99 | 33.0 | 35.2 |
| Colon | C18 | 3 720 | 1 985 | 59.4 | 68.5 | 1 735 | 53.8 | 59.1 |
| Rectum | C19-20 | 3 715 | 2 091 | 52.9 | 60.3 | 1 624 | 56.0 | 60.9 |
| Anus | C21 | 313 | 138 | 21.5 | 26.1 | 175 | 33.1 | 37.2 |
| Liver | C22 | 9 872 | 7 553 | 16.9 | 18.7 | 2 319 | 19.4 | 20.8 |
| Gall bladder | C23-24 | 2 293 | 1 127 | 24.3 | 28.5 | 1 166 | 21.8 | 24.4 |
| Pancreas | C25 | 1 807 | 993 | 11.8 | 13.8 | 814 | 14.7 | 16.3 |
| Gastrointestinal tract | C26 | 58 | 35 | 16.9 | 20.1 | 23 | 30.4 | 35.4 |
| Nose/Sinuses | C30-31 | 224 | 142 | 40.8 | 45.3 | 82 | 54.6 | 59.0 |
| Larynx | C32 | 791 | 717 | 62.5 | 73.0 | 74 | 52.3 | 59.9 |
| Lung | C33-34 | 8 482 | 6 197 | 15.4 | 18.1 | 2 285 | 17.5 | 19.5 |
| Other thoracic organs | C37-38 | 226 | 138 | 42.6 | 45.6 | 88 | 52.1 | 55.3 |
| Bone | C40-41 | 343 | 200 | 43.7 | 45.7 | 143 | 49.9 | 51.3 |
| Melanoma of skin | C43 | 179 | 87 | 40.7 | 45.1 | 92 | 55.0 | 60.0 |
| Other skin | C44 | 618 | 328 | 75.8 | 88.6 | 290 | 84.8 | 98.4 |
| Mesothelioma | C45 | 52 | 32 | 37.5 | 39.9 | 20 | 45.0 | 49.0 |
| Connective tissue | C47+C49 | 484 | 261 | 50.6 | 54.5 | 223 | 57.6 | 60.3 |
| Peritoneum | C48 | 160 | 82 | 42.1 | 44.5 | 78 | 34.5 | 35.9 |
| Breast | C50 | 5 355 | 35 | 60.0 | 68.7 | 5 320 | 77.8 | 79.9 |
| Vulva | C51 | 55 | | | | 55 | 60.0 | 66.4 |
| Vagina | C52 | 46 | | | | 46 | 67.2 | 71.1 |
| Cervix | C53 | 5 357 | | | | 5 357 | 75.7 | 78.7 |
| Corpus uteri | C54 | 522 | | | | 522 | 81.8 | 84.7 |
| Uterus unspecified | C55 | 87 | | | | 87 | 73.6 | 76.4 |
| Ovary | C56 | 1 305 | | | | 1 305 | 64.2 | 66.2 |
| Other female genital org. | C57 | 85 | | | | 85 | 41.2 | 43.2 |
| Placenta | C58 | 113 | | | | 113 | 92.8 | 93.3 |
| Penis | C60 | 43 | 43 | 64.9 | 82.2 | | | |
| Prostate | C61 | 948 | 948 | 53.5 | 72.8 | | | |
| Testis | C62 | 106 | 106 | 91.5 | 93.7 | | | |
| Kidney | C64 | 1 177 | 781 | 61.2 | 68.0 | 396 | 66.5 | 70.6 |
| Renal pelvis | C65 | 147 | 103 | 70.6 | 81.6 | 44 | 52.3 | 59.5 |
| Ureter | C66 | 104 | 70 | 52.1 | 62.0 | 34 | 58.8 | 64.8 |
| Urinary bladder | C67 | 1 930 | 1 595 | 65.4 | 77.6 | 335 | 58.6 | 66.8 |
| Other urinary organs | C68 | 64 | 33 | 36.1 | 49.0 | 31 | 32.3 | 36.4 |
| Eye | C69 | 93 | 58 | 69.0 | 72.1 | 35 | 65.7 | 67.8 |
| Brain & nervous system | C70-72 | 1 163 | 643 | 37.5 | 38.9 | 520 | 41.3 | 42.2 |
| Thyroid | C73 | 2 657 | 416 | 84.2 | 90.2 | 2 241 | 93.0 | 95.5 |
| Adrenal gland | C74 | 87 | 50 | 41.0 | 42.2 | 37 | 40.4 | 40.8 |
| Other endocrine | C75 | 78 | 56 | 62.5 | 64.9 | 22 | 63.3 | 64.3 |
| Hodgkin lymphoma | C81 | 133 | 75 | 63.6 | 66.9 | 58 | 81.0 | 84.1 |
| Non-Hodgkin lymphoma | C82-85+C96 | 1 680 | 986 | 50.8 | 54.9 | 694 | 57.2 | 60.0 |
| Multiple myeloma | C90 | 347 | 196 | 24.7 | 28.0 | 151 | 31.0 | 32.7 |
| Lymphoid leukaemia | C91 | 595 | 343 | 37.4 | 38.1 | 252 | 47.9 | 48.4 |
| Myeloid leukaemia | C92-94 | 1 219 | 671 | 26.8 | 27.9 | 548 | 24.5 | 25.0 |
| Leukaemia unspecified | C95 | 80 | 40 | 12.5 | 13.2 | 40 | 16.9 | 17.2 |

Abs: absolute survival; Rel: relative survival

Table 4b. Site-wise number of cases and relative survival by age group: Seoul, Republic of Korea, 1993–1997 cases followed-up until 2001

| Site | ICD-10 | Cases included | Number of cases by age group | | | | | Relative survival by age group | | | | |
|---------------------------|------------|----------------|------------------------------|-------|-------|-------|-------|--------------------------------|-------|-------|-------|-------|
| | | | | | | | | % 5-year survival | | | | |
| | | | < 45 | 45-54 | 55-64 | 65-74 | > 75 | < 45 | 45-54 | 55-64 | 65-74 | > 75 |
| Lip | C00 | 26 | 2 | 3 | 4 | 6 | 11 | 100.5 | 33.9 | 82.3 | 78.5 | 44.3 |
| Tongue | C01-02 | 243 | 39 | 53 | 74 | 49 | 28 | 83.1 | 60.4 | 55.7 | 45.5 | 77.0 |
| Oral cavity | C03-06 | 303 | 50 | 59 | 97 | 64 | 33 | 83.0 | 43.5 | 47.0 | 42.9 | 38.3 |
| Salivary gland | C07-08 | 194 | 62 | 54 | 42 | 23 | 13 | 84.4 | 63.0 | 72.0 | 35.2 | 64.5 |
| Tonsil | C09 | 92 | 13 | 25 | 29 | 19 | 6 | 85.8 | 58.3 | 59.2 | 31.5 | 51.3 |
| Oropharynx | C10 | 52 | 8 | 13 | 11 | 13 | 7 | 63.3 | 32.0 | 49.0 | 28.1 | 0.0 |
| Nasopharynx | C11 | 278 | 98 | 72 | 64 | 32 | 12 | 57.7 | 54.4 | 23.2 | 41.6 | 37.1 |
| Hypopharynx | C12-13 | 170 | 5 | 33 | 59 | 57 | 16 | 40.8 | 35.0 | 24.2 | 29.0 | 38.2 |
| Oesophagus | C15 | 1 134 | 24 | 169 | 448 | 336 | 157 | 42.2 | 19.7 | 23.0 | 15.1 | 12.5 |
| Stomach | C16 | 16 180 | 2 728 | 3 154 | 4 715 | 3 769 | 1 814 | 52.7 | 55.5 | 50.9 | 41.0 | 29.7 |
| Small intestine | C17 | 242 | 45 | 44 | 70 | 55 | 28 | 42.8 | 37.6 | 36.7 | 24.2 | 16.0 |
| Colon | C18 | 3 720 | 478 | 702 | 1 059 | 948 | 533 | 69.5 | 67.3 | 67.4 | 62.2 | 51.0 |
| Rectum | C19-20 | 3 715 | 495 | 774 | 1 119 | 895 | 432 | 59.8 | 63.0 | 62.9 | 60.6 | 52.0 |
| Anus | C21 | 313 | 39 | 60 | 73 | 68 | 73 | 20.7 | 37.4 | 35.0 | 36.4 | 27.5 |
| Liver | C22 | 9 872 | 1 309 | 2 918 | 3 159 | 1 802 | 684 | 25.3 | 18.8 | 18.8 | 18.3 | 13.1 |
| Gall bladder | C23-24 | 2 293 | 151 | 346 | 662 | 668 | 466 | 42.9 | 30.0 | 26.5 | 23.9 | 22.0 |
| Pancreas | C25 | 1 807 | 138 | 273 | 544 | 521 | 331 | 32.7 | 17.1 | 10.7 | 14.9 | 13.4 |
| Gastrointestinal tract | C26 | 58 | 7 | 6 | 14 | 18 | 13 | 14.4 | 48.9 | 15.6 | 32.9 | 24.4 |
| Nose/Sinuses | C30-31 | 224 | 53 | 60 | 55 | 37 | 19 | 46.7 | 49.9 | 44.9 | 60.4 | 61.4 |
| Larynx | C32 | 791 | 33 | 131 | 302 | 214 | 111 | 80.0 | 79.9 | 71.6 | 74.4 | 53.8 |
| Lung | C33-34 | 8 482 | 482 | 1 218 | 2 504 | 2 788 | 1 490 | 23.5 | 23.6 | 20.1 | 15.8 | 14.9 |
| Other thoracic organs | C37-38 | 226 | 86 | 38 | 41 | 44 | 17 | 64.3 | 54.7 | 37.0 | 37.4 | 16.6 |
| Bone | C40-41 | 343 | 227 | 30 | 42 | 27 | 17 | 52.0 | 58.5 | 47.9 | 9.0 | 38.1 |
| Melanoma of skin | C43 | 179 | 42 | 40 | 49 | 28 | 20 | 37.2 | 56.6 | 60.9 | 50.0 | 66.5 |
| Other skin | C44 | 618 | 113 | 94 | 131 | 149 | 131 | 86.8 | 90.1 | 93.7 | 98.7 | 97.0 |
| Mesothelioma | C45 | 52 | 13 | 14 | 12 | 8 | 5 | 46.8 | 44.4 | 44.2 | 30.2 | 53.7 |
| Connective tissue | C47+C49 | 484 | 227 | 78 | 77 | 64 | 38 | 61.5 | 65.9 | 54.2 | 45.1 | 35.5 |
| Peritoneum | C48 | 160 | 61 | 34 | 35 | 20 | 10 | 50.7 | 32.9 | 40.0 | 41.4 | 0.0 |
| Breast | C50 | 5 355 | 2 107 | 1 814 | 922 | 387 | 125 | 81.6 | 82.0 | 77.7 | 71.3 | 56.5 |
| Vulva | C51 | 55 | 10 | 8 | 11 | 19 | 7 | 60.4 | 63.5 | 84.7 | 59.1 | 68.0 |
| Vagina | C52 | 46 | 10 | 11 | 11 | 9 | 5 | 80.4 | 72.8 | 85.3 | 64.0 | 26.7 |
| Cervix | C53 | 5 357 | 1 794 | 1 373 | 1 262 | 711 | 217 | 87.1 | 79.4 | 75.4 | 68.3 | 52.9 |
| Corpus uteri | C54 | 522 | 158 | 169 | 126 | 51 | 18 | 90.9 | 88.3 | 78.9 | 72.4 | 71.4 |
| Uterus unspecified | C55 | 87 | 35 | 21 | 13 | 12 | 6 | 77.6 | 82.2 | 95.9 | 57.0 | 45.5 |
| Ovary | C56 | 1 305 | 572 | 287 | 242 | 139 | 65 | 81.5 | 64.1 | 52.2 | 44.1 | 35.5 |
| Other female genital org. | C57 | 85 | 26 | 22 | 17 | 15 | 5 | 54.2 | 46.2 | 42.7 | 21.8 | 33.1 |
| Placenta | C58 | 113 | 99 | 13 | 1 | 0 | 0 | 94.2 | 85.9 | 102.7 | | |
| Penis | C60 | 43 | 4 | 6 | 11 | 11 | 11 | 101.8 | 69.4 | 50.4 | 89.7 | 112.2 |
| Prostate | C61 | 948 | 9 | 25 | 193 | 365 | 356 | 33.7 | 57.7 | 74.0 | 71.2 | 77.3 |
| Testis | C62 | 106 | 90 | 8 | 3 | 4 | 1 | 91.8 | 104.5 | 109.9 | 91.9 | 150.5 |
| Kidney | C64 | 1 177 | 240 | 258 | 353 | 229 | 97 | 80.9 | 75.8 | 68.7 | 58.3 | 42.6 |
| Renal pelvis | C65 | 147 | 10 | 29 | 44 | 51 | 13 | 61.0 | 64.5 | 81.4 | 73.8 | 96.8 |
| Ureter | C66 | 104 | 3 | 21 | 29 | 36 | 15 | 34.1 | 44.2 | 74.8 | 69.6 | 57.2 |
| Urinary bladder | C67 | 1 930 | 184 | 302 | 541 | 516 | 387 | 92.7 | 84.9 | 76.8 | 75.0 | 57.3 |
| Other urinary organs | C68 | 64 | 3 | 7 | 16 | 14 | 24 | 33.6 | 59.0 | 40.4 | 50.4 | 35.8 |
| Eye | C69 | 93 | 62 | 12 | 12 | 3 | 4 | 69.7 | 60.4 | 98.6 | 0.0 | 79.5 |
| Brain & nervous system | C70-72 | 1 163 | 651 | 169 | 205 | 106 | 32 | 51.9 | 34.7 | 25.0 | 14.3 | 14.0 |
| Thyroid | C73 | 2 657 | 1 348 | 560 | 424 | 234 | 91 | 99.6 | 97.1 | 93.1 | 79.9 | 44.7 |
| Adrenal gland | C74 | 87 | 62 | 10 | 11 | 3 | 1 | 43.0 | 51.8 | 39.7 | 0.0 | 0.0 |
| Other endocrine | C75 | 78 | 53 | 6 | 10 | 4 | 5 | 73.7 | 86.4 | 54.4 | 0.0 | 0.0 |
| Hodgkin lymphoma | C81 | 133 | 76 | 20 | 17 | 17 | 3 | 83.3 | 72.4 | 50.7 | 62.8 | 57.3 |
| Non-Hodgkin lymphoma | C82-85+C96 | 1 680 | 608 | 335 | 378 | 264 | 95 | 62.6 | 58.8 | 56.0 | 46.4 | 49.5 |
| Multiple myeloma | C90 | 347 | 39 | 71 | 111 | 95 | 31 | 56.7 | 27.1 | 30.1 | 27.4 | 7.6 |
| Lymphoid leukaemia | C91 | 595 | 483 | 34 | 33 | 36 | 9 | 46.1 | 18.1 | 25.2 | 39.2 | 14.2 |
| Myeloid leukaemia | C92-94 | 1 219 | 701 | 187 | 178 | 113 | 40 | 33.1 | 20.9 | 20.9 | 10.4 | 7.2 |
| Leukaemia unspecified | C95 | 80 | 41 | 10 | 10 | 10 | 9 | 29.4 | 0.0 | 0.0 | 0.0 | 0.0 |